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insect relations of this remarkable family. Heliamphora and Darlingtonia are still recognized as monotypic, but a new species of Sarracenia (*S. Sledgei*, from the Gulf states) is described, 7 in all being recognized.—J. M. C.

Lactarius and Russula.—BATTAILLE[9] has published a monograph of these genera, to which he gives the group name Astérosporés, on account of their echinulate or granulate spores. He describes all of the European species, adding personal observations to the diagnoses of the various authors. The keys are admirably constructed to lead easily to the species. For Lactarius the author has adopted the classification of QUÉLET. For Russula the two grand divisions (Leucosporae and Xanthosporae) of QUÉLET are continued, but a number of subsections are defined and named. At the same time, it is shown, that the color of the spores is not a very reliable character, and the principal groups must be defined by a varying combination of characters.—J. M. C.

Grout's Mosses.—The fourth part of this work,[10] issued in April last, maintains the reputation of its predecessors and brings the author's task within sight of completion. Part V, the final one, is announced for 1909, to contain some plates and text missing from this part, together with an index and other useful adjuncts.

Part IV completes the Leskeaceae and contains a good part of the Hypnaceae, with the usual excellent reproductions of illustrations from the *Bryologia Europaea* and SULLIVANT'S *Icones*, and some characteristic details which are original.—C. R. B.

Index of desmids.—A supplement to NORDSTEDT'S *Index Desmidiacearum*, which was published in 1896, has just appeared.[11] The interval of over ten years has witnessed such an accumulation of material that a large supplement became necessary. The new bibliography included bears testimony to the great activity of the students of the group during this period, about 500 titles being enumerated, under 120 authors. To examine this vast amount of material and to organize it for the purpose of the index has called for an amount of labor that the students of desmids are sure to appreciate.—J. M. C.

Flora of Greece.—The last fascicle of Halácsy's *Conspectus Florae Graecae* was published in 1904, and now a supplement has been issued.[12] The first fascicle appeared in 1900, so that four to eight years have elapsed since the various parts appeared. During this period the author says that local and visiting botanists have been extremely active in exploration, discovering new stations, plants new to Greece, and new species. All these additions have been brought together in this supplement, so that the *Conspectus* may be regarded as fairly complete again.—J. M. C.

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[9] BATAILLE, FRÉDÉRIC, Flore monographique des Astérosporées (Lactaires et Russules). pp. 100. Besançon (route de Vesoul, 18): The author. 1908. *fr.*3.

[10] GROUT, A. J., Mosses with hand lens and microscope. A non-technical handbook of the more common mosses of the northeastern United States. Part IV. Imp. 8vo. pp. 247–318. *pls. 56–75. figs. 134–165.* Brooklyn: The Author, 360 Lenox Road, Flatbush. 1908. $1.25.

[11] NORDSTEDT, C. F. O., Index Desmidiacearum citationibus locupletissimus atque bibliographia. Supplementum. pp. 150. Berlin: Gebrüder Borntraeger. 1908.

[12] HALÁCSY, E. DE, Conspectus Florae Graecae. Supplementum. pp. 132. Leipzig: Wilhelm Engelmann. 1908.

Anatomy of dicotyledons.—The translation of the SOLEREDER'S *Systematische Anatomie der Dicotyledonen*[13] into English gave the author opportunity to revise the work and to add much supplementary matter. This has now been brought together at the instance of the German publisher for the benefit of those who have the original. This large *Erganzungsband* will be desirable for all those libraries that have the first two volumes, for it contains an immense amount of material. Besides the additional data, the concluding remarks have necessarily been revised. —C. R. B.

NOTES FOR STUDENTS

Sieve tubes in Laminariales.—Miss SYKES[14] has investigated the anatomy and histology of Macrocystis and Laminaria, chiefly *M. pyrifera* and *L. saccharina*. A few other species, such as *Sacchariza bulbosa*, *Laminaria digitata*, *Alaria esculenta*, and *Nereocystis Luetkeana*, were also examined to supplement the main results. Chief attention was paid to the morphological nature of the trumpet hyphae and of the true sieve tubes, the presence or absence of protoplasmic connecting threads, the development of sieve plates, and the nature of callus.

Some of the conclusions may be summarized as follows: (1) The trumpet hyphae in *M. pyrifera* and *L. saccharina* are to be looked upon as true sieve tubes. They represent the original central cells of the thallus modified, and may be termed primary pith filaments. Though they differ as to their degree of development, they are certainly homologous with the secondary sieve tubes of Macrocystis, which are similarly derived from the modified primary cortex of the young thallus. (2) It is believed that the histology of the sieve plates in the primary pith filaments and secondary sieve tubes is essentially the same. Threads are formed traversing the young sieve plates, and each gives rise in the older plate, apparently by means of ferment action, to a slime string inclosed in a rod of callus. In Macrocystis each original thread first divides to form a group, and each thread of a group forms its own callus rod, but finally, by fusion, only one slime string is produced from each group. The older sieve plates are obliterated by the deposition of a large mass of callus over their surface, and callus is also formed throughout the length of the old sieve tubes. (3) The callus is to be looked upon as a

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[13] SOLEREDER, H., Systematische Anatomie der Dicotyledonen. Ein Handbuch für Laboratorien der wissenschaftlichen und angewandten Botanik. Erganzungsband. Imp. 8vo. pp. viii+422. Stuttgart: Ferdinand Enke. 1908.

[14] SYKES, M. G., Anatomy and histology of *Macrocystis pyrifera* and *Laminaria saccharina*. Annals of Botany **22**:291–325. *pls. 19–21*. 1908.